

**WHAT IS CLAIMED IS:**

1. Manganese dioxide for lithium primary batteries which is obtained by soda neutralization and heat treatment of electrolytic manganese dioxide and has a sodium content of 0.05 to 0.2% by weight.
- 5 2. Manganese dioxide for lithium primary batteries according to claim 1, which has a phosphorus content of 0.05 to 2.0% by weight.
3. A process for producing manganese dioxide with a sodium content of 0.05 to 0.2% by weight for lithium primary batteries comprising the steps of neutralizing electrolytic manganese dioxide with an aqueous solution containing 2.0 to 5.0 g of sodium hydroxide per  
10 kg of manganese dioxide and then heating the neutralized manganese dioxide.
4. The process for producing manganese dioxide for lithium primary batteries according to claim 3, wherein said electrolytic manganese dioxide has a phosphorus content of 0.05 to 2.0% by weight.
5. A lithium primary battery comprising the manganese dioxide according to claim 1 or 2  
15 as a cathode active material.